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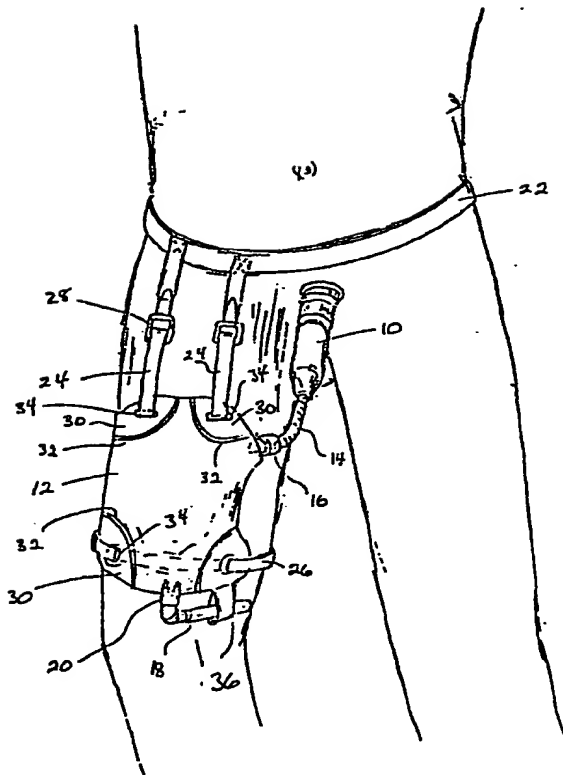
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(54) Urinary drain system.

(57) A male urinary collection and drain system includes a penis sheath (10), a flexible, accordion-like outlet tube (14) connecting the distal end of the sheath (10) to a urine collecting bag (12) via a positive-acting check valve (16) which prevents reverse flow, and a flexible, accordion-like drain tube (18) connected to the lower end of the bag and fitted with a manually operable valve (20). The bag is located at thigh level and is supported in that position primarily by waist-belt (22) and one or more suspension straps (24), with additional stability being provided by one or more leg-encircling straps (26).

The sheath includes one or more elastic O-rings (104) formed integrally with its side wall, preferably at the bottoms of peripheral grooves (102), for forming a seal with the penis and for holding the sheath in place.

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This invention relates to urinary collection and drain devices for individuals, male and female, who are partially or totally urinary incontinent.

BACKGROUND

A variety of urinary collection and drain devices have been disclosed in the prior art. The basic purpose of such devices is to temporarily collect urine in a receptacle carried by the wearer and to provide for periodic draining of the urine from the receptacle through a manually operated valve into a toilet. When the wearer is more or less physically active, i.e. ambulatory or confined partially or wholly to a wheel chair, it is important that the device be comfortable, accommodate itself to the movements of the wearer and be easily drained, all without introducing blockage or back-up of urine, leakage of urine while in place, and spillage during draining.

The devices which are commercially available and/or disclosed in the prior art serve the basic desired purpose but they tend to suffer from one or more disadvantages in the areas just mentioned. Examples of prior art devices or components thereof especially for male use are disclosed in United States Patents 3,336,926, 3,586,041, 3,608,552, 3,631,857, 3,661,156, 3,721,243, 3,724,461, 3,739,783, 3,749,096, 3,788,324, 3,835,857, 3,916,900, 3,926,233, 3,998,228, 3,999,550, 4,022,213, 4,055,179, 4,073,295, 4,202,335, 4,232,677, 4,343,316, 4,344,432, 4,352,356 and 4,345,342,

SUMMARY OF THE INVENTION

In accordance with the invention there is provided a urine collecting bag assembly for use in a urinary collecting and draining assembly comprising a bag having an upper end fitted with a urine inlet and a lower end fitted with a manually operable urine drain valve; an adjustable leg strap carried by the bag near its lower end for encircling the leg of a wearer; an adjustable waist strap for encircling the waist of the wearer; and at least one suspending strap having opposite ends connected to the waist strap and to the upper end of the bag, said suspending strap having a length appropriate to suspending the bag at a location on the upper leg of the wearer.

In accordance with the present invention in another aspect a male urinary collection and drain system includes a penis sheath of special novel construction, a flexible, accordion-like outlet tube connecting the distal end of the sheath to a urine collecting bag via a positive-acting check valve which prevents reverse flow, and a flexible, accordion-like drain tube connected to the lower end of the bag and

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fitted with a manually operable valve. The bag is located at thigh level and is supported in that position primarily by a waistbelt, with additional stability being provided by one or more leg straps. The sheath
5 is of special construction in that it includes one or more elastic O-rings formed integrally with its side wall, preferably at the bottoms of peripheral grooves, for forming a seal with the penis and for holding the sheath in place. In another embodiment
10 the sheath is held in place by an assembly of waist band, pouch and leg straps, with the O-rings serving primarily a sealing function rather than a holding function. In this embodiment the sheath extends loosely through a hole in the pouch and includes a peripheral
15 flange which lies between the pouch and the body of the wearer so as to position the sheath properly.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a view of a urinary collection and draining system embodying the principles of the
20 present invention;

Figures 2,3 and 4 are fragmentary views of tubing useful in making the connections shown in Figure 1;

Figures 5 and 6 are partial sectional views of two embodiments of check valves;

Figure 7 is a partial sectional view of a drain valve;

Figure 8 is a partial sectional view of another drain
5 valve;

Figure 9 is a view on an enlarged scale, of the sheath of Figure 1;

Figure 10 is a sectional view taken on the line 10-10 of Figure 9;

Figure 11 is a view of a longitudinally pleated sheath;
10

Figure 12 is a sectional view taken on the line 12-12 of Figure 11;

Figure 13 is a view of another longitudinally pleated sheath;

Figure 14 is a sectional view taken on the line 14-14 of Figure 13;
15

Figure 15 is a perspective view of another draining system; and

Figure 16 is a sectional view taken on the line 16-16 of Figure 15.

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Fig. 17 is a perspective view of parts of a female urinary drain system corresponding to the view of Fig. 15 and, like Fig. 15, not showing the collecting bag and drain tube;

5 Fig. 18 is a side view of the urine collecting device of the female drain system of Fig. 17; and

Fig. 19 is a perspective view of the device of Fig. 18, shown in its expanded form.

DETAILED DESCRIPTION

Figure 1 illustrates a urinary collection and drain system which embodies several features of the invention. The major parts of the system are a penis sheath 10 or condom, a collection receptacle or bag 12, a flexible bag-inlet conduit 14 connecting the distal end of the sheath with the bag 12 via a check valve 16 which prevents back flow of urine, and a short flexible drain tube 18 connected to the lower end of the bag 12 and fitted with a manually operable drain valve 20.

As is conventional the vertical dimension of the bag 12 is somewhat greater than its horizontal dimension so that the bag 12 will lie against the front surface of one of the wearer's upper legs and at the same time have an appropriate volume. The bag 12 is thus generally rectangular, although its corners may be considerably rounded to give a generally elliptical shape. In any case the urine inlet conduit 14 connects with the bag at a location essentially at a corner (or equivalent) of the bag 12 so that the length of the conduit 14 can be as short as possible and contain as few bends as possible. This is important because it lessens the chance that the conduit 14 will become kinked during body movements and thereby block the flow of urine into the bag 12. Backup of urine into the sheath and into contact with the penis should of course be avoided in order to prevent leakage of urine and the possibility of infection.

The bag 12 must remain in essentially a fixed position

because if it shifts, the conduit 14 may become kinked, collapsed or pulled loose. In the past it has been conventional to support the weight of the bag 12 by two vertically spaced-apart straps which encircle the upper leg of the wearer. This arrangement has now been found to be often unsatisfactory because either it permitted the bag to shift vertically or laterally or, if the straps were tightened enough to prevent shifting, the straps were binding and uncomfortable on the leg. Accordingly, in the system of the present invention the weight of the bag 12 is supported essentially wholly by an adjustable waist band 22 which encircles the waist of the wearer. Preferably the waist band 22 is quite narrow, for example, 1/2 inch to 1 inch. The bag 12 is suspended from the waist band 22 by one or more adjustable suspension straps 24 so as to be located on the front surface of the wearer's upper leg. Near the lower end of the bag 12 is an adjustable stabilizing strap 26 which encircles the wearer's leg. The straps 22, 24 and 26 are preferably of woven fabric which is elastic in the longitudinal dimension of the respective strap, and suitable buckles 28 or other adjusting means are included.

Conveniently the bag 12 is formed of soft flexible plastics material such as polyvinyl chloride, by heat-sealing the edges of two superimposed sheets of the plastic material. In the illustrated embodiment each corner area 30 of the bag 12 is strengthened and sealed from the interior of the bag 12 by an arcuate heat-sealed band 32. The area 30 can then be provided

with one or more slots 34 through which the elastic straps are threaded, thereby avoiding the use of hard or bulky connections between the bag and the straps.

At the lower end of the bag 12 is a depending retaining loop 36 for loosely holding the flexible drain tube 18 in a convenient storage position, such as parallel to the lower edge of the bag 12. As illustrated in Figure 1 the loop 36 is a permanently closed loop formed by a heat sealing operation. Alternatively the loop 36 can be formed as a strap folded over on itself with the end of the strap being releasably connected to the remainder of the strap, as with short strips of Velcro fastening fabric attached to the strap.

The conduit 14 and the drain tube 18 are made of natural flexible material such as polyvinyl chloride. To enhance flexibility, prevent kinking and render the members 14 and 18 more accommodating to movements of the wearer's body these members are radially fluted, bellows-like for at least a portion of their length. The flutes may be formed so as to provide flexibility without providing any substantial axial elastic extensibility or they may be formed to provide such extensibility or they may be formed to provide both flexibility and extensibility. Figure 2 illustrates a tube construction which is particularly suitable for providing resilient axial extensibility, the tube wall having flaps 38 extending outwardly and at an acute angle to the axis of the tube. Figures 3 and 4 illustrate tube constructions which

are suitable for providing flexibility. Figure 3 shows closely-spaced sharp-edged pleats 40 s t at an angle to the tube axis, and Figure 4 shows radially extending pleats 42 with rounded edges.

Figures 5 and 6 illustrate check valves 16a and 16b which are particularly suitable for use in the invention. The valve 16a includes a tubular piece 44 telescoped into a tubular piece 46 to the extent permitted by an external shoulder 48 on the piece 44. An internal cavity 50 is formed by and between the pieces 44 and 46 and residing in the cavity 50 is a floating closure disc 52. The diameter of the disc 52 is greater than the diameter of the bore in the piece 46 and smaller than the outer diameter of the end of the piece 44. The end of the piece 44 has a transverse groove 54 which permits flow in the direction of the arrow 56, i.e. into the bag 12. Reverse flow out of the bag 12 will force the disc 52 into sealing engagement with the bore in the piece 46 and thereby prevent flow into the conduit 14. The Figure 6 construction is similar to Figure 5 except that the closure member is a ball 58.

Figure 7 illustrates a particularly suitable drain valve 20a for use in the invention. As illustrated the valve is a two-piece assembly having an interiorly-threaded tubular part 60 and an externally-threaded tubular part 62 threaded into the piece 60. The inner end 64 of the part 62 is conical and is engageable with a complementary annular valve seat 66 on the part 60. The

bore 68 of the piece 62 terminates in one or more transverse openings 70 located below the cone 64. The valve is shown in a closed position; slight unscrewing of the part 62 will disengage the cone 64 from the valve seat 66 and permit flow through the valve. It is preferred to connect the piece 60 to the bag 12 and the piece 62 to the drain tube 18, but this relationship can be reversed. The part 62 has a laterally projecting finger piece 72 which can be grasped by the fingers to aid in unscrewing the part 60. Only a slight twist, for example one-half turn, is necessary to open the valve.

Figure 8 illustrates another drain valve 20b. This valve comprises a tubular plunger axially slidable within a barrel 76, with an O-ring 78 forming a seal between the exterior of the plunger 74 and the interior of the barrel 76. The upper end of the barrel 76 is in communication with the bag 12. The bore 80 in the plunger 74 terminates in one or more transverse openings 82 located below the O-ring 78. The upper end of the plunger 74 carries a closure disc 84 the lower surface of which is engageable with the adjacent end of the barrel 76. A compression spring 86 is located in a cavity 88 formed by and between the plunger 74 and the barrel 76. The spring 86 surrounds the plunger 74 and bears against an internal shoulder 90 on the barrel 76 and a cap 92 on the barrel 76. The spring 86 normally biases the plunger 74 downwardly so that the closure disc 84 seals with the upper end of the barrel 76, preventing flow. When the plunger 74 is manually

moved upwardly against the spring bias, the disc 84 moves away from the end of the barrel 76 and after further movement the aperture 82 passes above the O-ring 78, with the result that liquid will pass into the aperture 82 and downwardly through the bore 80. The O-ring 78 can be carried in a peripheral groove in the plunger 74, and in such a construction flow through the valve will occur when the O-ring 78 rises above the end of the barrel. The plunger 74 is illustrated in Figure 8 in an intermediate position.

0 Figure 9 illustrates, on an enlarged scale, the penis sheath 10 of Figure 1. The sheath is a tubular member molded of flexible elastic material such as rubber having an open proximal end 94 and a distal end 96 integral with a flexible conduit 98. The proximal end 94 has a conventional bead 100 to reinforce the sheath. Axially spaced from the end 94 are two circumferential grooves 102 molded into the material of the sheath 10. The bottom wall of each groove forms an integral O-ring 104 which forms a seal with the penis and also holds the sheath 10 in place. To this end the bottom wall is of greater thickness than the side walls of the groove and the adjacent wall of the sheath. With this construction the bottom wall, when radially expanded, produces a greater inward contracting force than do the axially adjacent portions of the sheath wall. The connector tube 98 includes a bellows section 105 immediately adjacent the distal end of the sheath 10.

5 Figures 11 and 12 illustrate a penis sheath 10a which

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is similar to the sheath 10 of Figur 9 xcept that the sheath 10a is longitudinally pl at d at 106 to allow greater radial xtension. The pleats 106 are provided on the entire circumference. Figures 13 and 14 illustrate a similar sheath 10b having continuous fine pleats 107 entirely around the circumference of the sheath.

Figure 15 illustrates a draining system having a penis sheath 108 releasably carried by a fabric pouch 110 which is waist-supported. The upper end of the pouch is directly attached to a thin (e.g. 1/2 inch to 1 inch wide) elastic belt 112 having Velcro fasteners 114, 116 at its ends. The lower end of the pouch 110 is connected in a conventional manner to the rear part of the waist strap by elastic straps 118. Each side of the pouch 110 is provided with an adjustable strap 120 adapted to encircle one of the wearer's legs. The purpose of the straps 120 is to hold the pouch 110 snugly to the wearer's body in order to hold the removable sheath 108 in place, as described subsequently.

The front of the pouch 110 is provided with an aperture 122 around which a piece of reinforcing fabric 124 may be attached if necessary. The sheath 108 extends through the aperture 122. A radial flange 126 is fixed to the sheath near its proximal end and lies against the inner surface of the pouch 110 but is not attached thereto. The flange 126 is substantially stiffer than the material of the sheath 108 and resiliently restrains or prevents the sheath 108 from being pulled out of the pouch 110.

The sheath 108 can, however, be easily removed in a rearward direction from the pouch 110 when the assembly is not being worn. When the assembly is being worn, with the leg straps 120 secured about the legs of the wearer, the flange 126 is pressed between the pouch 110 and the wearer's body and thereby stabilizes the position of the sheath 108. The sheath preferably includes molded-in O-rings 128 of the kind previously described. In this embodiment the O-rings 128 serve essentially only as urine seals, as the sheath is held in position by the straps.

Figs. 17 to 19 show an adaptation of the drain system of Figs. 1 and 15 for use by a woman. Corresponding to the pouch 110 of the system shown in Fig. 15, that of Fig. 17 has an approximately square web 210 of soft textile fabric through a central hole of which is inserted the urine collection device 212 illustrated in Figs. 18 and 19. The web 210 is attached by four straps 214, 216 to a resiliently extensible waist belt 218 which is here shown with a simple hook and loop connector 220 for its ends but which may alternatively be of adjustable length. The rear straps 214 are shown with optional length-adjustment buckles 222. Instead the front straps 216 may have length-adjustment means, or all four straps 214, 216 may be adjustable in length.

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As in the system of Fig. 15, also attached to the web 210 are two strip and buckle arrangements 224 for attaching around the upper legs of the wearer. By suitable attachment and adjustment of the belt and the straps, the web 210 can be made to lie comfortably against the crotch of the wearer.

Shown hanging from the belt 220 are two vertical straps 226 for attachment to the collecting bag, e.g. via buckles in the manner of the straps 24 shown in Fig. 1. The bag is suspended from the belt 220 by these straps 226, in use. In this embodiment the collecting bag, its drain tube and valve and its manner of support on the user's leg are exactly as shown in Fig. 1.

The collection device of Figs. 18 and 19 is in the form of a flanged funnel 228 of relatively thick, soft rubber, e.g. sponge rubber of a latex like material, attached to a flanged sleeve portion 230 formed of thin resilient flexible rubber sheet and integral with a narrower conduit portion 232 leading to the collecting bag via a check valve, like the conduit 14 of Fig. 1. Also, like the conduit 14 of Fig. 1, the conduit 232 is partly of bellows-like construction 234, to allow easy flexing and length variation without kinking or strain.

The funnel 228 is of sufficient rigidity to hold its shape approximately when in use without imposing discomfort on the user and has an exterior flange 236 slightly spaced from its oval open end 238, so that the funnel can be arranged by the user comfortably with the end 238 appropriately placed in relation to the urethra to collect the urine. The funnel 238 is attached to the end of the sleeve 230 at seal 240 closely behind the flange 236 but extends a substantial distance further into the sleeve 230 to its distal end 242 which is freely located within the sleeve, so that when the sleeve and funnel are in their telescoped arrangement as shown in Fig. 18, the end 242 is spaced from the walls of the sleeve thereby inhibiting collection of liquid in this region and also flow of liquid back up the funnel 228. This reduces the risk of infection.

The sleeve 230 has a relatively rigid rubber flange 244 welded to its exterior (so that the interior of the sleeve 230 has no discontinuities which might collection urine). In use this flange 244 lies against the inner face of the web 210, and the flange 236 of the funnel lies against it. The funnel is thus held in place by the web 210.

CLAIMS

1. A urinary drain assembly comprising a bag
(12) having an upper end fitted with a urine inlet
(14) and a lower end fitted with a manually operable
urine drain valve (20); a leg strap (26) carried by
5 the bag near its lower end for encircling the leg of
a wearer; a waist strap (22;218) for encircling the
waist of the wearer; and at least one suspending strap
(24;226) having opposite ends connected to the waist
strap and to the upper end of the bag, said suspending
10 strap having a length appropriate to suspending the
bag at a location on the upper leg of the wearer.
2. A drain assembly according to claim 1 wherein
said bag is generally rectangular or elliptical and
further including, at one corner area, a urine inlet
15 assembly (14) which includes a check-valve (16) for
preventing flow out of said inlet assembly, and at
the end opposite said inlet assembly a urine outlet
assembly (18) which includes said manually operable
valve and a flexible drain tube at least a portion
20 of which is radially pleated in order to enhance bending
without kinking.

3. A drain assembly according to claim 1 or claim 2 for male use and further having a pouch (110) carried by the waist band, said pouch having an opening therein, a condom or penis sheath (108) extending loosely through the opening in the pouch, the sheath having a distal end provided with a urine outlet and a proximal open end; a radial flange (126) fixed on said sheath and located inside said pouch in engagement with the inner surface thereof, the flange being of greater diameter than the opening in said pouch to thereby restrain removal of said sheath from said pouch in an outward direction; and at least two leg straps (120) connected to said pouch for encircling the legs of the wearer.
4. A drain assembly as in claim 3 wherein said sheath comprises a tubular member of molded flexible elastic material having, near but axially spaced from its proximal end, at least one circumferential molded-in groove (102) the bottom wall of which is thicker in radial dimension than the axially adjacent wall portions of the sheath, said thickened wall having a radially inwardly contracting force, when radially stretched, than the remainder of the sheath so as to function as an O-ring seal with the penis.

5. A drain assembly according to claim 4 wherein said sheath comprises a tubular member of molded flexible elastic material having a plurality of longitudinally extending parallel pleats molded in the flexible elastic material.

6. A urinary drain assembly according to claim 1 or claim 2 for female use and further having a web of material (210) suspended from the waist band (218) so as to be located at the crotch of the wearer, said web having an opening through it; a urine collection funnel (228) extending through the opening in the web and having a distal end forming an urine outlet and a proximal open end; a flange (236) fixed on said funnel and locatable so as to bear against the inside face of the web to retain the funnel in position; and at least two leg straps (224) connected to said web for encircling the legs of the wearer.

7. A male urinary drain assembly comprising a waist band (22) for encircling the waist of the wearer; a pouch (110) carried by the waist band, said pouch having an opening therein; a condom or penis sheath (108) extending loosely through the opening in the pouch, the sheath having a distal end provided with a urine outlet and a proximal open end; a radial flange (126) fixed on said sheath and located inside said

pouch in engagement with the inner surface thereof,
the flange being of greater diameter than the opening
in said pouch to thereby restrain removal of said sheath
from said pouch in an outward direction; and at least
5 two leg straps (120) connected to said pouch for
encircling the legs of the wearer.

8. A condom or penis sheath for use in a urinary
drain assembly comprising a tubular member (10) of
molded flexible elastic material, said member having
10 an open proximal end and a distal end having connected
thereto a flexible urine discharge conduit (98) of
lesser diameter than the tubular member; said tubular
member having, near but spaced axially from its proximal
end, at least one elastic circumferential ring molded
15 (104) integrally with the material of said sheath,
said ring being radially outwardly stretchable and
having a radially inwardly contracting force greater
than the remainder of said sheath so as to function
in use as an O-ring which holds the sheath to the penis
20 and forms a seal therewith.

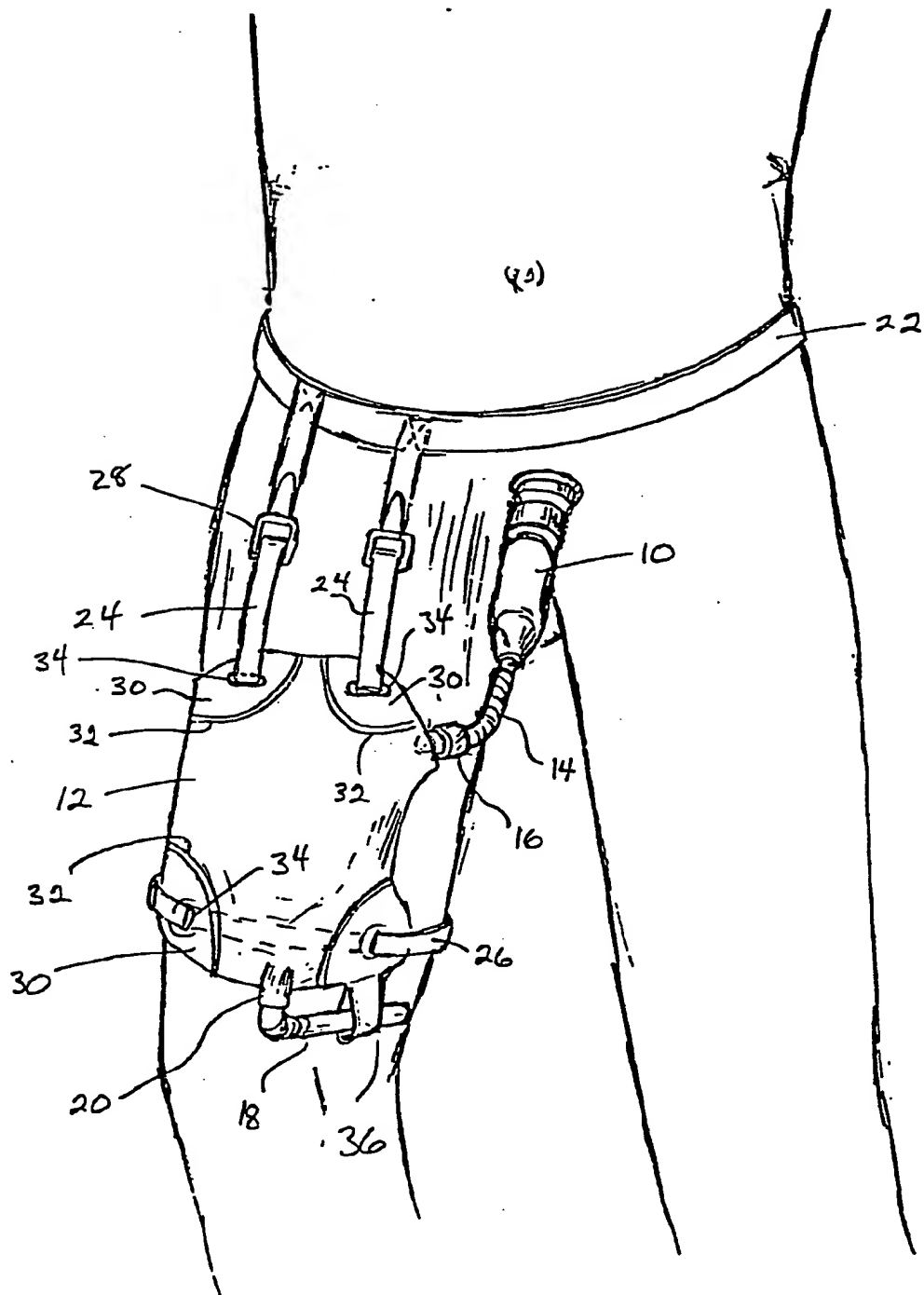
9. A condom or penis sheath for use in a urinary
drain assembly comprising a tubular member (10a;10b)
of molded flexible elastic material, said member having
an open proximal end and a distal end having connected
25 thereto a flexible urine discharge conduit (98) of

lesser diameter than the tubular member; said tubular member having a plurality of longitudinally extending parallel pleats (106;107) molded in the flexible elastic material.

- 5 10. A female urinary drain assembly comprising a waist band (218) for encircling the waist of the wearer; a web (210) of material suspended from the waist band so as to be located at the crotch of the wearer, said web having an opening through it; a urine
10 collection funnel (228) extending through the opening in the web and having a distal end forming an urine outlet and a proximal open end; a flange (236) fixed on said funnel and locatable so as to bear against the inside face of the web to retain the funnel in
15 position; and at least two leg straps (224) connected to said web for encircling the legs of the wearer.

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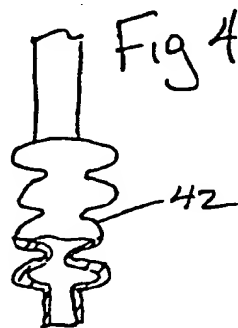
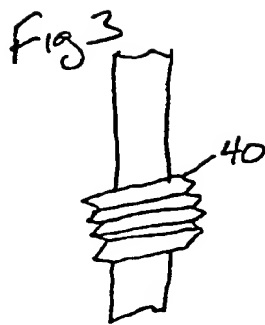
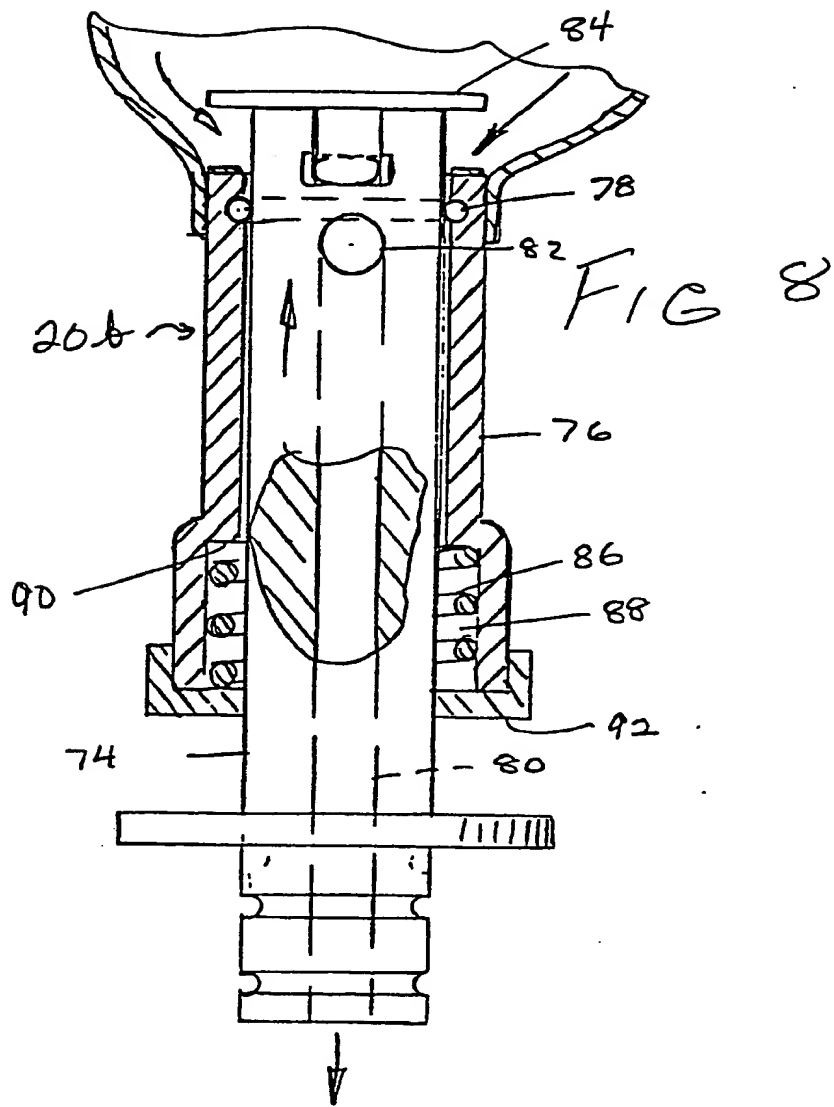


Fig. 15

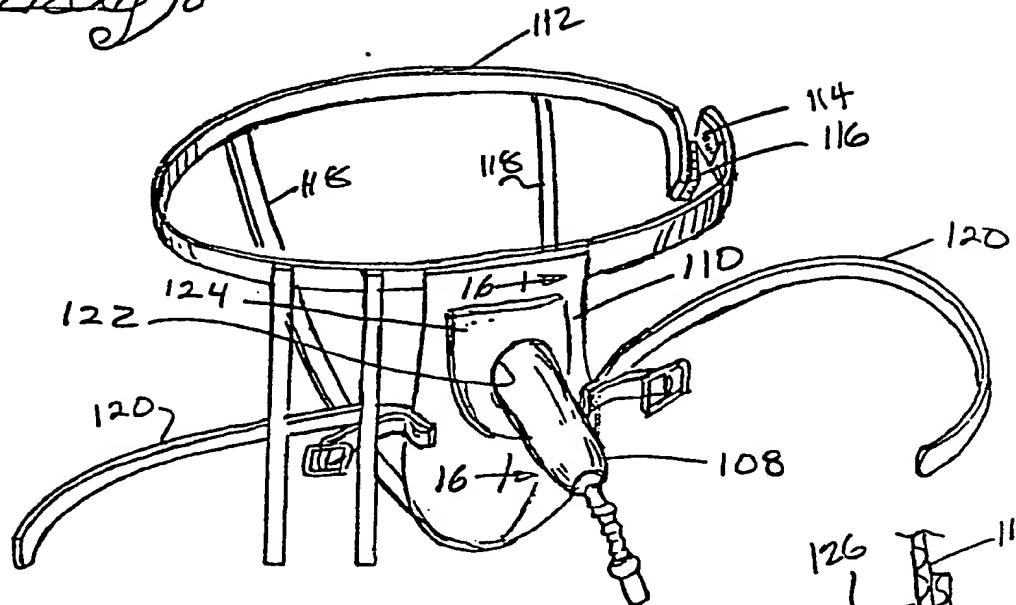


Fig. 16

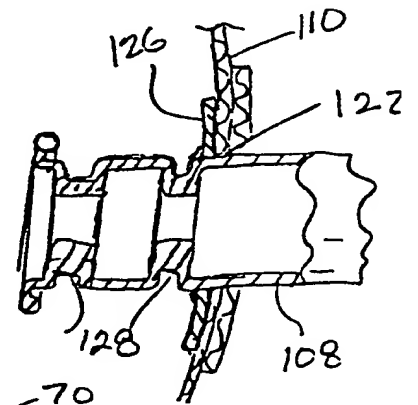


Fig. 5

Fig. 6

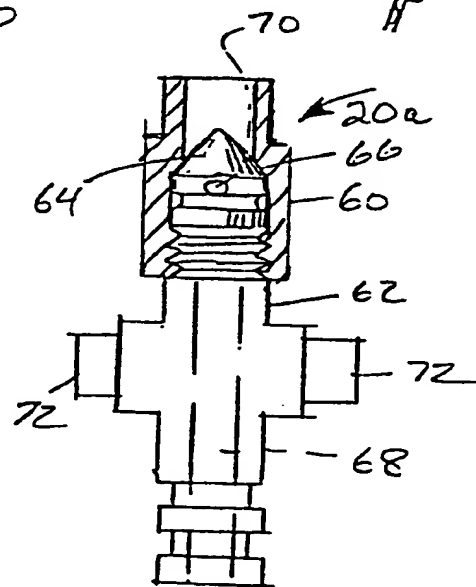
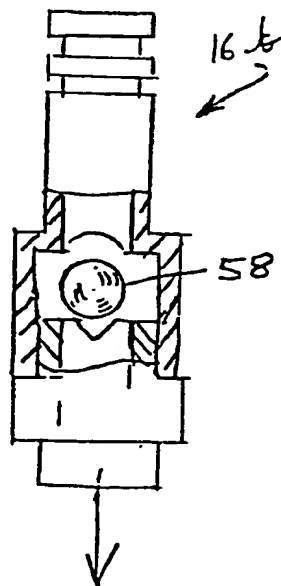
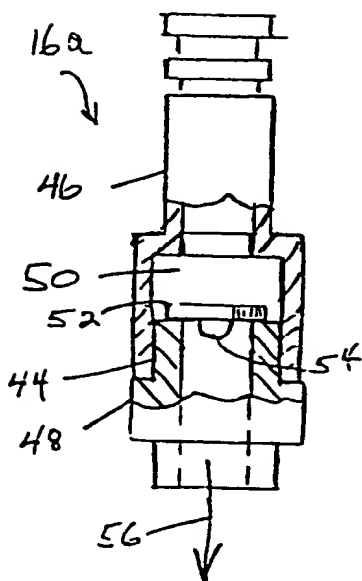


Fig. 7

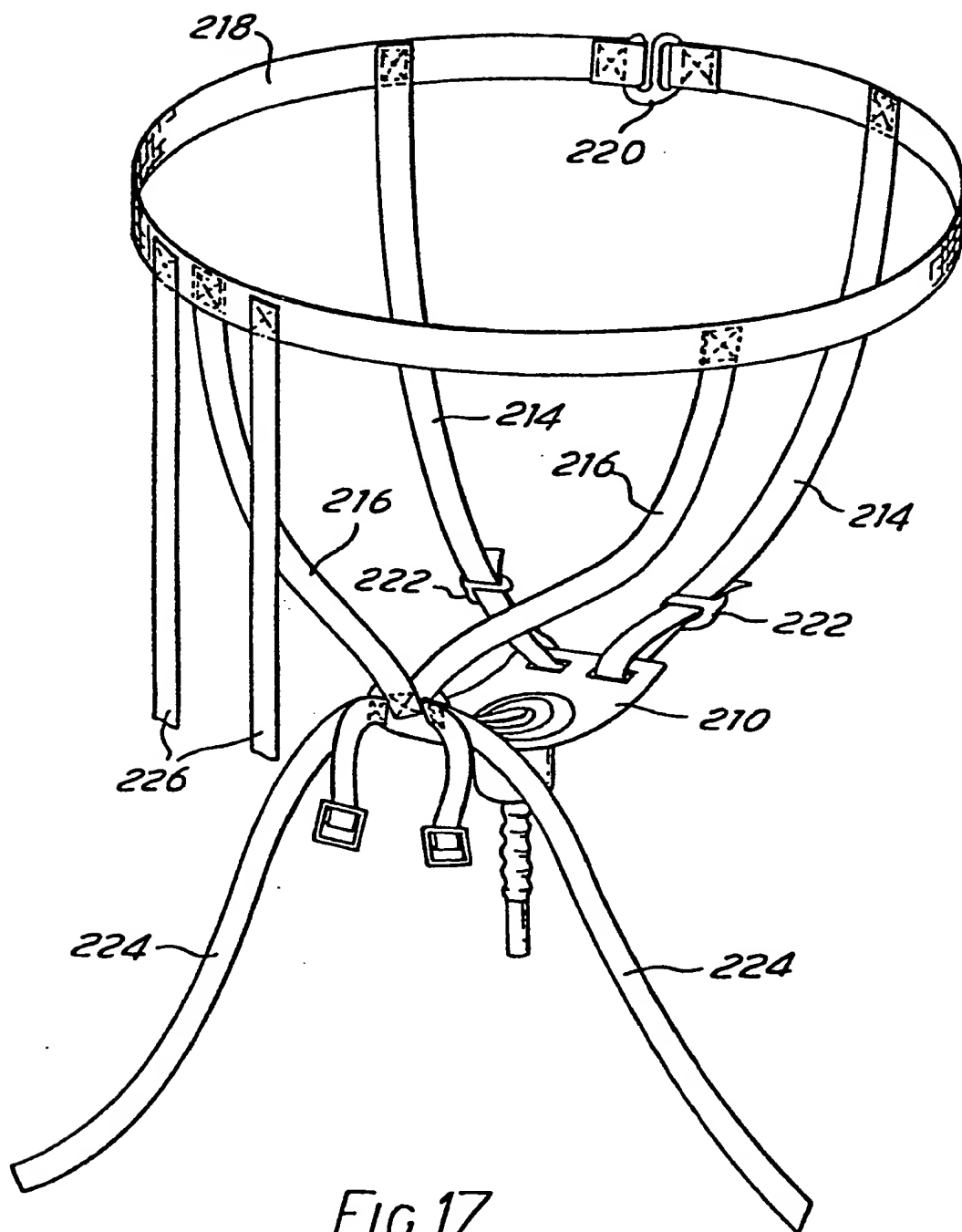


FIG. 17

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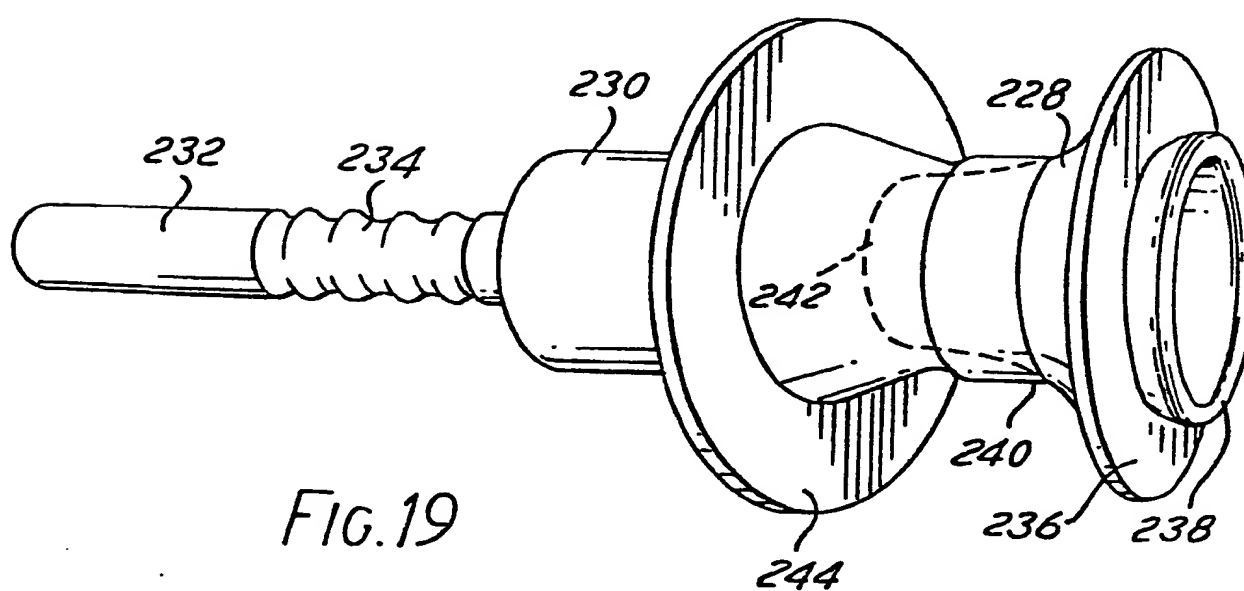
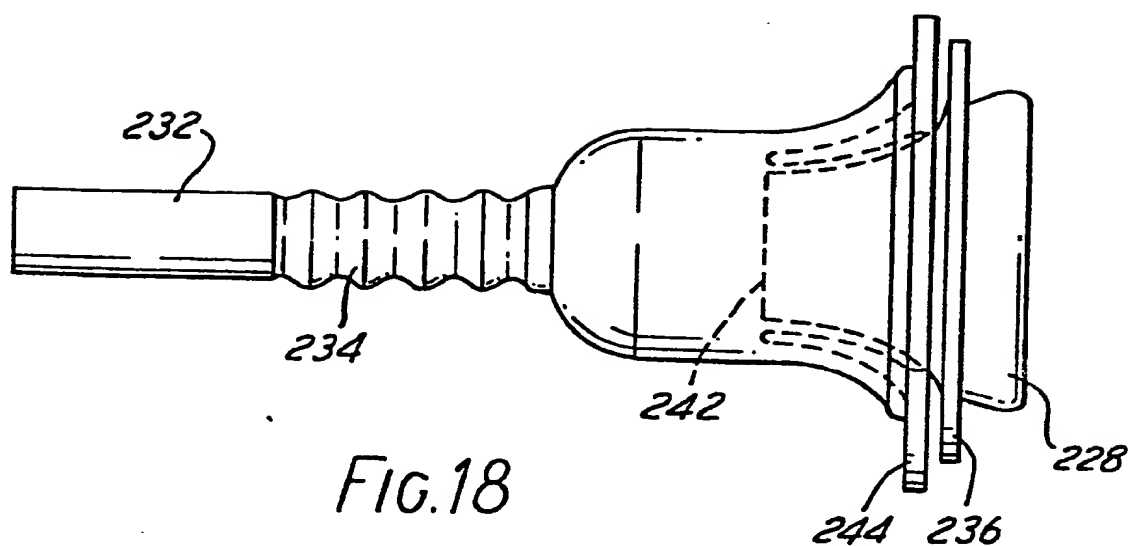


Fig. 9

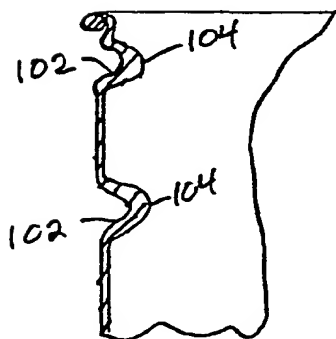
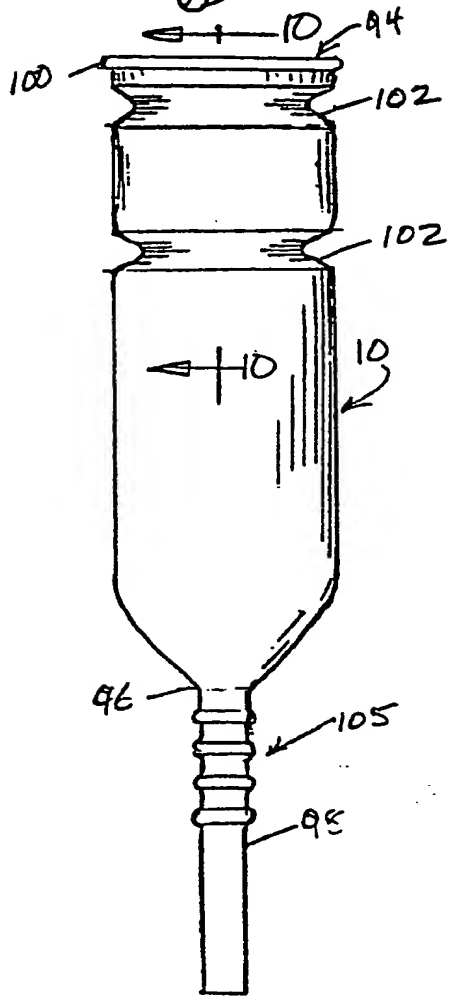


Fig. 10.

Fig. 11.

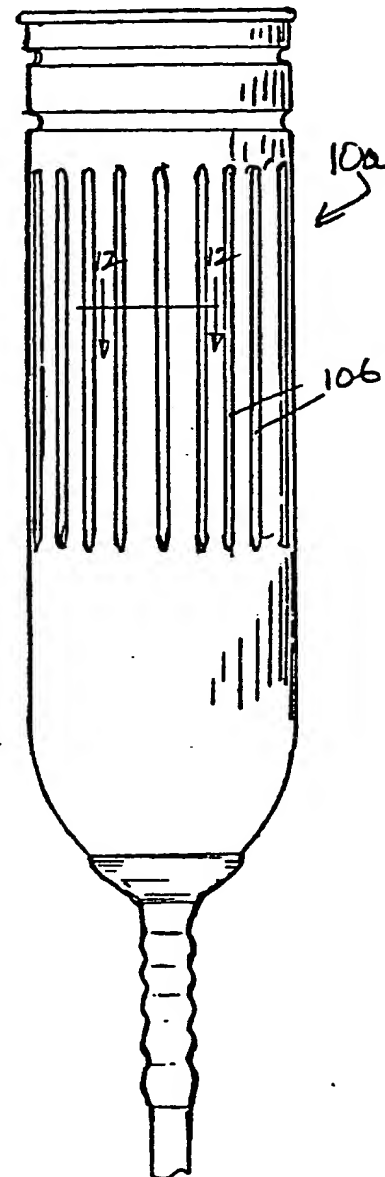


Fig. 12

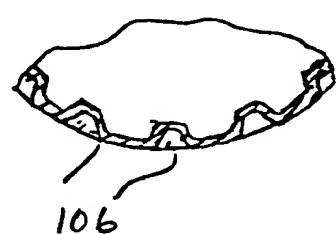


Fig. 13

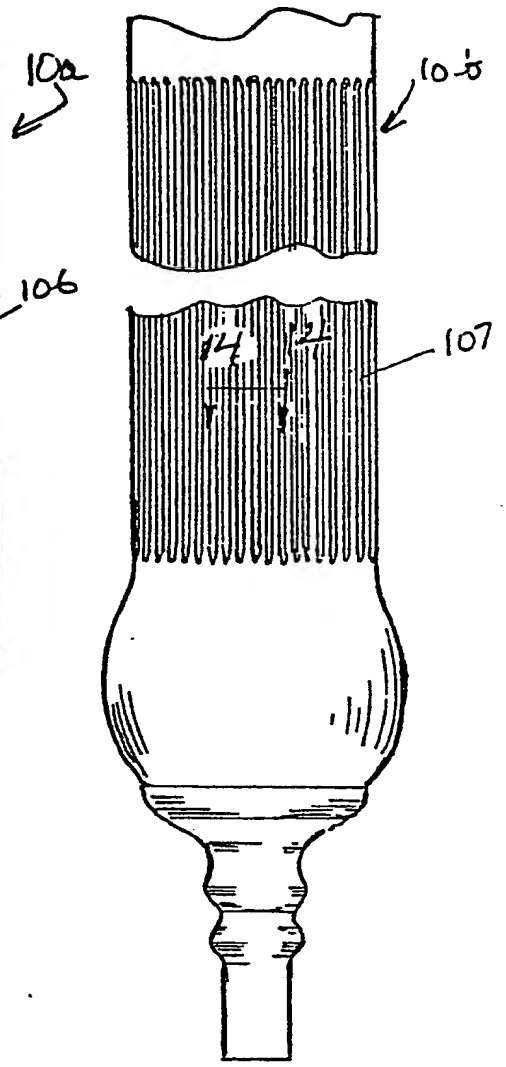
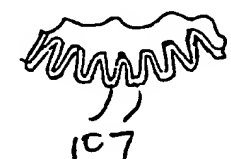


Fig. 14



DOCUMENTS CONSIDERED TO BE RELEVANT

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	US-A- 2 133 130 (F. BUCHSTEIN) * Figure 1 *	1	A 61 F 5/44
X	FR-A- 2 422 388 (J. FLESCHER) * Figures 1,2 *	1	
A	---	2,3	
X	US-A- 2 628 617 (J.F. WRIGHT) * Figure 1 *	1	
A	---	3	
X	US-A- 3 651 810 (G.E. ORMEROD) * Whole document *	1,6	
Y	---	2-5	TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
Y	DE-A- 2 043 198 (H.H. BIJKERK) * Figure 1; page 8, lines 1-23; page 10, lines 5-13 *	2	A 61 F
Y	---		
Y	GB-A- 871 862 (J. JOYNER et al.) * Page 2, lines 75-111; figures 1,2 *	3-5	
Y	GB-A- 637 978 (J. JOYNER et al.) * Page 3, lines 12-51; figures 1,2 *	4,5	
<div> <div>Place of search</div> <div>The Hague</div> </div> <div> <div>Date of completion of the search</div> <div>14-08-1985</div> </div> <div> <div>Examiner</div> <div>WOLF</div> </div>			
<div> <div>CATEGORY OF CITED DOCUMENTS</div> <div> <div>X particularly relevant if taken alone</div> <div>Y particularly relevant if combined with another document of the same category</div> <div>A technical background</div> <div>O non-written disclosure</div> <div>P intermediate document</div> </div> <div> <div>T theory or principle underlying the invention</div> <div>E earlier patent document, but published on, after the filing date</div> <div>D document cited in the application</div> <div>L document cited for other reasons</div> <div>& member of the same patent family, corresponding document</div> </div> </div>			



CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions.

namely

- 1) Claims 1-6: Urinary drain assembly
- 2) Claim 7: Means to retain a drain assembly in a male garment
- 3) Claim 8: Molded o-ring for a condom
- 4) Claim 9: Longitudinally pleated condom
- 5) Claim 10: Means to retain a drain assembly in a female garment

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims

namely claims 1-6



European Patent
Office

EUROPEAN SEARCH REPORT

0185809
Application number

EP 84 30 8712

- 2 -

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl 4)
Y	US-A- 3 421 507 (V.D. GRESHAM) * Column 2, lines 14-25; figure 2 * ---	5	
A	US-A- 4 000 649 (P. HANIFL) * Abstract * ---	2	
A	WO-A- 81 01 957 (DAJEM) * Abstract * ---	3	
A	US-A- 3 742 953 (J.W. LEE) * Abstract * ---	2,5	
A	GB-A- 1 274 374 (SALT & SON) * Figures 1,3 * -----	3,5	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int Cl 4)
Place of search		Date of completion of the search	Examiner
CATEGORY OF CITED DOCUMENTS			
X	particularly relevant if taken alone	T	theory or principle underlying the invention
Y	particularly relevant if combined with another document of the same category	E	earlier patent document, but published on, or after the filing date
A	technological background	D	document cited in the application
O	non-written disclosure	L	document cited for other reasons
P	intermediate document	&	member of the same patent family, corresponding document